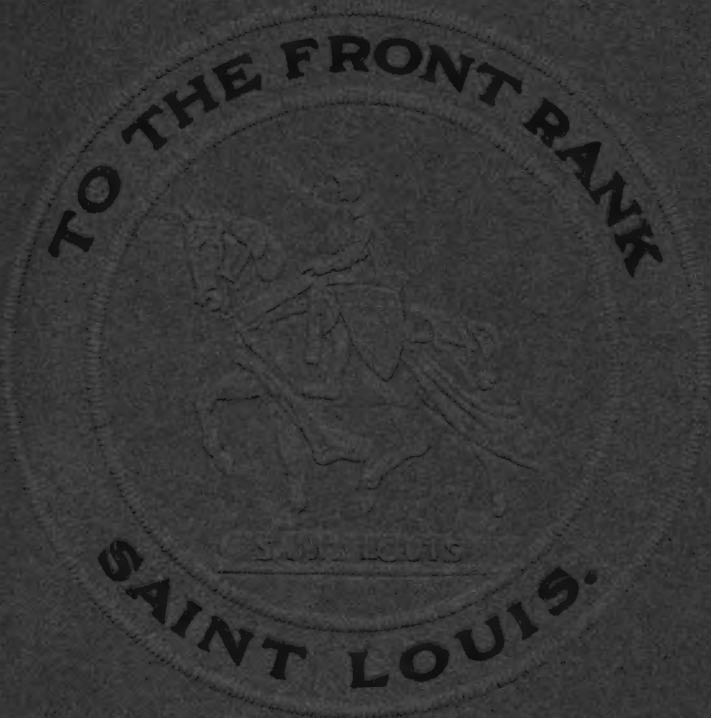


Front Rank



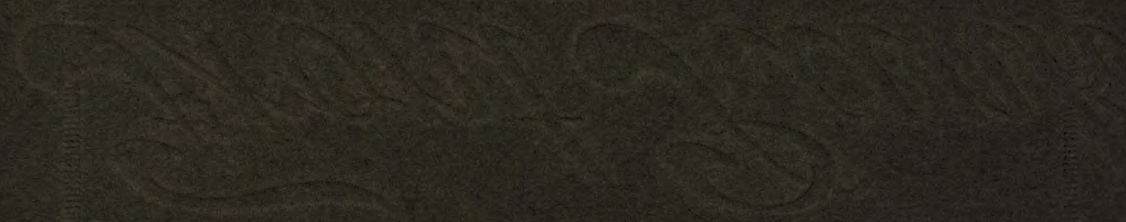
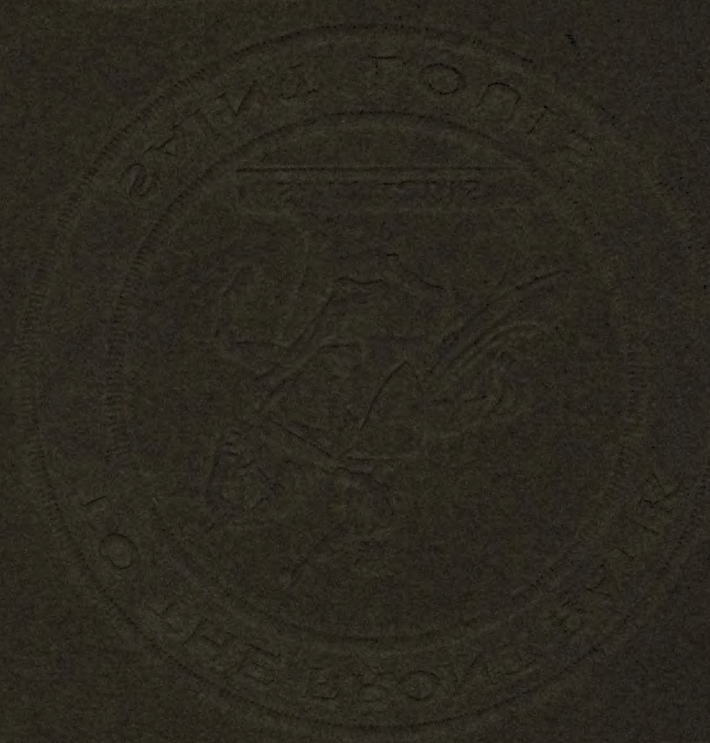
Furnaces

HAYNES-LANGENBERG

MFG. CO.

ST. LOUIS, U.S.A.

ST. JOHN'S COLLEGE
NEW BRUNSWICK
NEWARK, N.J. 07102-2399



CATALOGUE
& PRICE LIST

OF

FRONT RANK

STEEL FURNACES

AND

COMBINATION WARM AIR

AND HOT WATER

HEATERS



MANUFACTURED BY

HAYNES - LANGENBERG MFG. CO.

4045-4057 FOREST PARK BOULEVARD

ST. LOUIS, U. S. A.



THE IMPORTANCE OF THE FACTORY

In the making of a good furnace can not be over-estimated. We do not claim to have the "largest factory in the world," but we do claim that our equipment is of the very latest design, and that our facilities are ample.

WE CAN DELIVER THE GOODS.

To the Trade



IN presenting this number of our catalogue, we desire to express our appreciation of the liberal and growing patronage the **FRONT RANK** is receiving.

That the **FRONT RANK** has steadily grown in popularity for a quarter of a century, is an evidence of the fact that its success is founded on merit. A further evidence is the growing number of imitations on the market.

Keeping in close touch with practical installation work has been of inestimable value to us. During the last 25 years more than 14,000 **FRONT RANK** furnaces have been installed in St. Louis alone. We have watched these furnaces closely, and whenever we have found that a change would increase the efficiency or the life of the furnace, we have made it regardless of the cost, until the **FRONT RANK** stands in the top notch of furnace perfection.

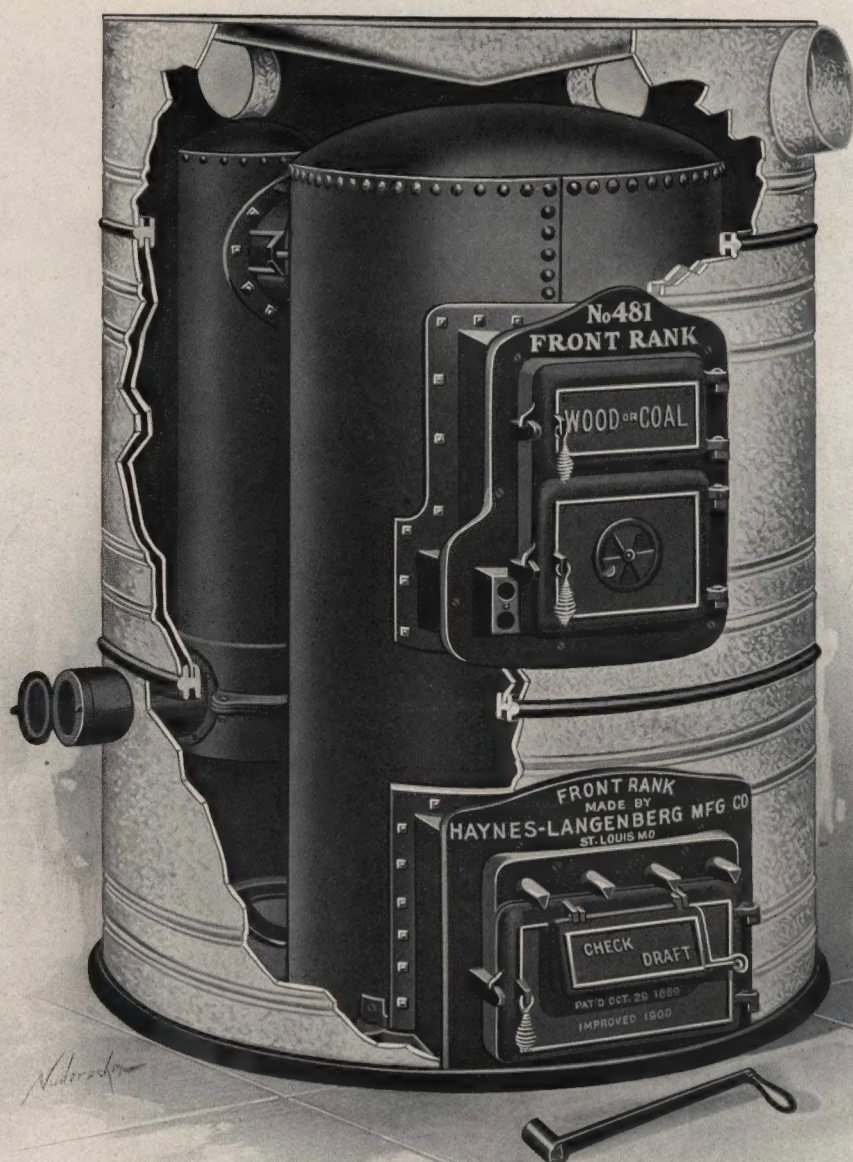
Now that health officers and scientific men generally are telling us of the importance of fresh air, the original fresh air heater (the furnace) is growing more and more popular, and more care is being taken both in the selection of the furnace and in the installation work. The consequence is that the hot air furnace is coming into its own.

In the following pages we show the construction of our **FRONT RANK** and **WINNER** furnaces, also our Hot Air and Hot Water Combination Heaters.

Our office and our salesmen are at your service to help you make sales and to assist you in construction work. When in doubt as to the best way to install a plant, send us your plans and let us help you. We make no charge for plans and specifications.

HAYNES-LANGENBERG MFG. CO.

FRONT RANK STEEL FURNACES



FRONT RANK PORTABLE FURNACE.

Showing section of double casing, coil pouch, clean-out cap, etc.

THE AIR WE BREATHE

Health officers everywhere are emphasizing the importance of **fresh air in the home.**

They tell us that the only method of heating that lends itself to **ventilation and humidifying the air** in a building is the **indirect method**, by which pure outdoor air is warmed and moistened by apparatus in the basement or cellar of the building and then conducted through pipes to the rooms to be heated.

The problem every home-builder is called upon to solve is: How shall I heat my house so that the air will not only be **comfortable, but healthful?**

SCIENTISTS AND PHYSICIANS' ENDORSEMENTS OF THE WARM AIR FURNACE.

"Under no circumstances should a room or office be heated exclusively by direct radiation from exposed steam radiators or pipes. It is one of the most unhealthy, killing systems in existence.

—LEWIS W. LEEDS,
"Consulting Engineer of Ventilation and Heating
for U. S. Treasury Department in 'Proceedings
of Franklin Institute.'"

"After careful study and trial and observation, I am compelled to condemn all direct methods of heating by radiators located in the rooms.

—B. G. LONG, M. D., Buffalo, N. Y."

"In all cases, tubercular diseases of the lungs and pneumonia are the diseases which are the most prevalent among persons living and working in **unventilated rooms.** —The Composition of Expired Air, and Its Effects upon Animal Life, by J. S. Billings, A. M., M. D., S. Weir Mitchell, M. D., and D. H. Berger, M. D.; Smithsonian Contributions to Knowledge."

"During all the **cold winter months** we have a **steadily increasing death rate** from the bad air diseases, namely, bronchitis, pneumonia and consumption. Especially is this true in Chicago, where so large a percentage of the **population is living in steam-heated tunnels**, called, by courtesy, flats or apartments.

—E. R. PRITCHARD,
"Former Secretary of Dept. of Health
of the City of Chicago."

"I have noted that **direct steam and hot water** have an **unfavorable effect** upon health, and this is particularly marked in **diseases of the lungs**, throat and respiratory passages. I attribute this unhealthful condition to the **lack of proper ventilation in rooms thus heated.** Living rooms should be heated by pouring untainted warm air into them, and in no other way.

—CHRISTOPHER H. SHEARER, M. D., Reading, Pa."

"It is well worth while for every man to understand that an **abundance of fresh air** is not merely theoretically a good thing, which is to be accepted if it come in his way, but that it is a **necessity for the preservation of health** and happiness, and that it is worth taking special pains to procure.

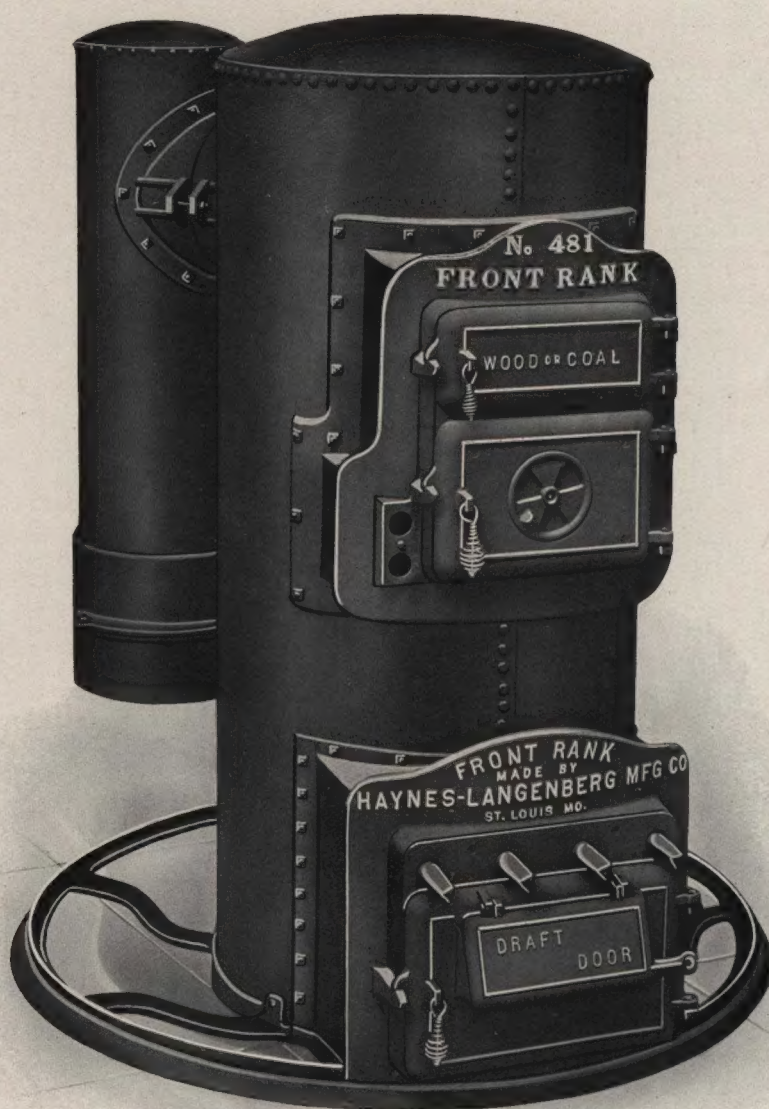
—JOHN B. BILLINGS, A. M., D. D.,
in "Ventilation and Heating."

It is possible for a man to live **three weeks without food, three days without water, and three minutes without air.**

This simple statement of a well-known fact should make it very clear that air, **Fresh Pure Air, is the most important element in the world for sustaining life.** It is also equally important that in order to perform the best labor, to do the best work in any occupation, human beings must be plentifully supplied with pure air.

—Chicago Health Department Talk.

FRONT RANK STEEL FURNACES



FRONT RANK DOUBLE DOOR FURNACE.

CONSTRUCTION

To be an **economical heater** a furnace must have a **large amount of radiating surface in comparison with the size of the fire pot**, and this surface must be arranged so that the air in passing upward will come in close touch with every part of it.

By referring to the cut on the opposite page, it will be seen that the **FRONT RANK Furnace is built on straight vertical lines**, thus causing the air in its ascent to come in **direct contact** with the **entire surface**. This principle is essential in a successful heater and is one of the strong features in the construction of our furnace.

DRUMS

The **FRONT RANK** drum or fire chamber is made of a **solid sheet of heavy armor plate with but a single seam, closely riveted like a boiler**, and is absolutely gas tight. Heavy cast flanges are placed around the openings where the smoke passes from the drum into the radiators to protect the steel.

FIRE POTS

The **Fire Pots** are lined with fire-clay tiling, which is **practically indestructible**. On the larger furnaces, heavy cast plates extend from the tile lining to the radiator collars, thus protecting the steel in most exposed part.

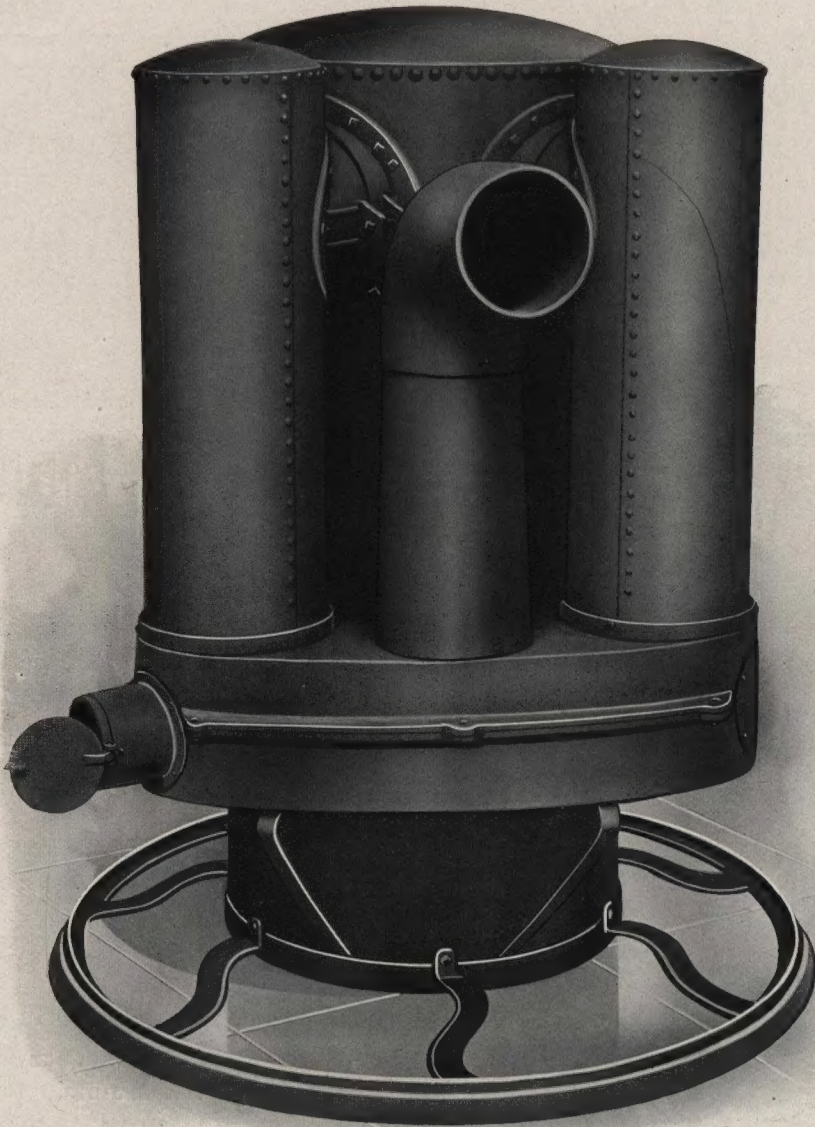
The cost of replacing a set of tile lining is little compared to the cost of a **cast fire pot**. In the latter case the entire furnace has to be torn down in order to get the pot in, while a set of brick can be put in through the feed door.

The **FRONT RANK** has **no direct draft** to warp out of place and let the heat escape straight up the chimney. We know of **no heater** where the smoke **has a longer travel** before making its escape from the furnace, and **all of this travel is inside the casing**. Where one of the flues is outside of the casing the heat is lost or wasted in the cellar.

This long fire travel is necessary to insure economy in the consumption of fuel. Most furnaces not only have a shorter fire travel, but much less radiating surface than the **FRONT RANK**, and in order to maintain their rated capacities in severe weather, they consume much more coal, trying to make up for lack of heating surface with a hotter fire.

It will be seen from the foregoing that the **FRONT RANK Steel Furnace** is of extremely simple construction. It does not require an engineer to run it. It is as easy to manage as a stove, easier to manage than some of the base burners. **The drum and radiators are self-cleaning**; they will positively not choke up, even with the dirtiest soft coal. The only part that ever needs cleaning is the horizontal dust box, which can be done by ordinary house help. The **FRONT RANK** will burn any kind of coal or wood successfully.

FRONT RANK STEEL FURNACES



FRONT RANK FURNACE.

(Rear View)

Showing radiators and all cast dust box and elbow, through all of which the products of combustion have to pass before reaching the chimney. No other furnace has a longer fire travel, and it is ALL INSIDE THE CASING.

A FEW PRACTICAL SUGGESTIONS

LOCATION OF FURNACE

Locate furnace to favor exposed rooms, giving preference to those having north or west exposures. **Locate registers as near furnace as possible, avoiding outside walls.** Make hot-air pipes of nearly equal length, and distribute evenly around the canopy.

For the first floor we recommend floor registers, or the new side-wall register that is placed in the baseboard.

SMOKE PIPES AND CHIMNEYS

The smoke pipes should never be made smaller than the collar of the furnace. The flues or chimneys should be from 8 to 12 inches in diameter, according to the size of the furnace, and should be used for the furnace only. Chimneys should extend above the highest point of roof. A **round** flue is better than a **rectangular** or even a **square** flue.

HOT-AIR PIPES

The diameter of the hot-air pipe should be in proportion to the length of the run, as well as the size of the room.

All hot-air pipes should be wrapped with asbestos paper, and where they pass through stone or brick walls thimbles should be used. Avoid sharp turns or angles in all pipe runs.

Give pipes as much elevation as possible—the more the better.

Where pipes have a good elevation the warm air passes rapidly up into the rooms, and the result is a cool cellar and a warm house.

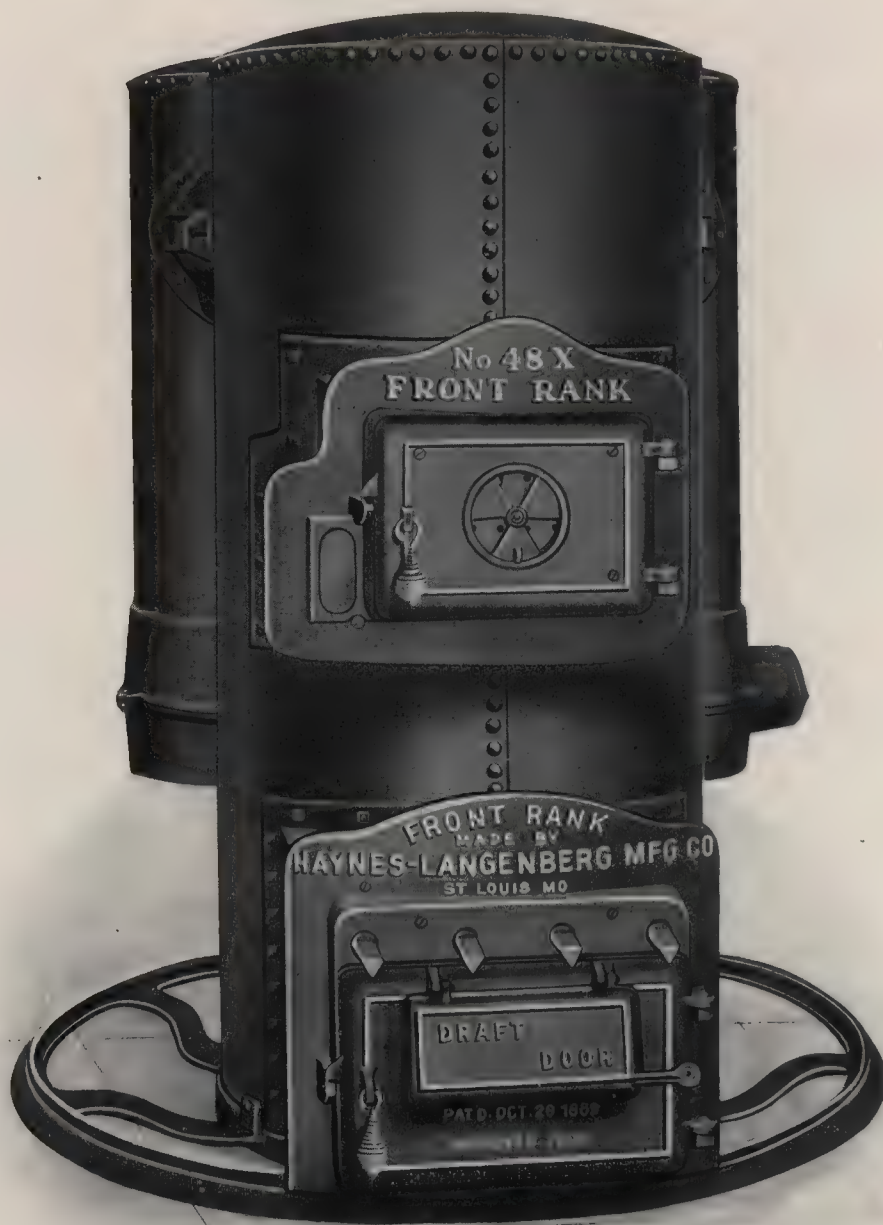
COLD-AIR SUPPLY.

The cold-air supply may be taken from either side of the house, but when it can be done it is desirable to take it from the north or west.

When taken from the **outside**, cold-air ducts should have a capacity equal to **three-fourths** of the combined areas of all the hot-air pipes, and when taken from the **inside** of the house it should **equal the areas of all hot-air pipes.** The supply of cold air must never be shut off. If, during a high wind, it is found that the air passes in faster than it can be heated, turn damper in cold-air chute partly off, or turn it off entirely and take air from the interior.

Next to a good chimney, nothing is more necessary in a well-regulated heating plant than a cold-air supply that is easily adjusted to all conditions.

FRONT RANK STEEL FURNACES



FRONT RANK SINGLE DOOR FURNACE.

Showing coil Pouch, clean-out door, etc.

DIRECTIONS FOR SETTING A FRONT RANK PORTABLE FURNACE

One of the most important requisites for the successful operation of a furnace is a proper location.

Place the furnace in a central position so that the pipes will be nearly of an equal length.

Where there is no granitoid floor, place the furnace on a foundation of brick (one course) laid the flat way.

- 1st. Place the base.
- 2d. Set the drum on the base.
- 3d. Fasten the brackets on which the dust box rests.
- 4th. Connect the two radiators and smoke pipe to dust box.
- 5th. Set same on brackets and connect to main drum, using plenty of cement at all joints.
- 6th. Place bottom section (24 inches wide) of casing and ring after cutting opening for clean-out in dust box.
- 7th. Before placing second section (30 inches wide) cut openings for smoke pipe and feed door, if for a double-door furnace. Use the door frame which fits over feed pouch as a guide in cutting size of opening in casing for feed pouch.
- 8th. Set canopy, which should be from 12 inches to 24 inches wide, according to size of furnace and depth of cellar, in top ring.
- 9th. Place collars for hot-air pipes on side of canopy, keeping tops of same in line and connect hot-air pipes to registers.
- 10th. Put in brick lining and grates.
- 11th. Make cold-air connection in rear of furnace in rectangular shape, so as to have the cold air enter as nearly under the dust box as possible.

*BRICK-SET CASINGS

When using brick casing, make inside diameter the same as the portable, except that it should be made square. The walls, which we make 9 inches thick, should be the same height as the portable. The height of both portable and brick-set casings should depend on the depth of the cellar. After placing the collars for the hot-air pipes, continue the brick up even with the top of the collars, then lay the iron bars across and cover with sheet iron. Continue the wall 4 inches higher and fill in with sand. Take cold air from the rear and place man-hole door next to clean-out.

* See cut, page 28.

FRONT RANK STEEL FURNACES



This combination system is especially adapted to houses that have outlying rooms or conservatories which, on account of their exposure or great distance from the furnace, can be more effectively heated with this auxiliary.

In houses already built it is sometimes desired to heat a distant room on second or third floor which could not be reached without cutting and disfiguring the house. In such cases the combination system is especially desirable.

FRONT RANK STEEL FURNACES



If possible always select a boiler about four inches less in diameter than the space in combustion chamber of furnace; this permits the fire to pass over outside as well as inside surfaces of boiler and gives greater capacity to boiler. All mains and risers not covered are counted as radiation. Discount on application.

No.	Size.	Capacity of Boiler in sq. ft. Radiation.	List.
120	12-in. Base only	50	\$ 8.00
121	12-in. Base and one ring.....	80	12.00
122	12-in. Base and two rings.....	120	18.00
140	14-in. Base only	125	12.00
141	14-in. Base with one ring.....	200	22.00
142	14-in. Base with two rings.....	275	32.00
180	18-in. Base only	225	22.00
181	18-in. Base with one ring.....	335	35.00
182	18-in. Base with two rings.....	445	48.00
220	22-in. Base only	335	30.00
221	22-in. Base with one ring.....	480	45.00
222	22-in. Base with two rings.....	625	60.00

FRONT RANK STEEL FURNACES



FRONT RANK COMBINATION GAS AND COAL FURNACES.

With these gas burners we furnish either cast or brick linings. The flame is thrown outwardly behind the lining directly against the drum.

The burner may be placed on top of the lining or between two rows of linings as shown in above cut.

We also make a burner that throws the flame towards the center of the fire pot. With either of these burners coal may be used without readjustment of the apparatus.

FRONT RANK STEEL FURNACES



SHOWING THE HOT BLAST STRIPS.

These strips introduce superheated air over and through the coal which, mixing with the gases, causes a more nearly complete combustion of gas and smoke.

FRONT RANK STEEL FURNACES



Above cut shows Fire Pot with Cast Linings.

HOMES HEATED WITH FRONT RANK STEEL FURNACES



RESIDENCE OF
REV. S. J. NICCOLLS
& HORTENSE PLACE

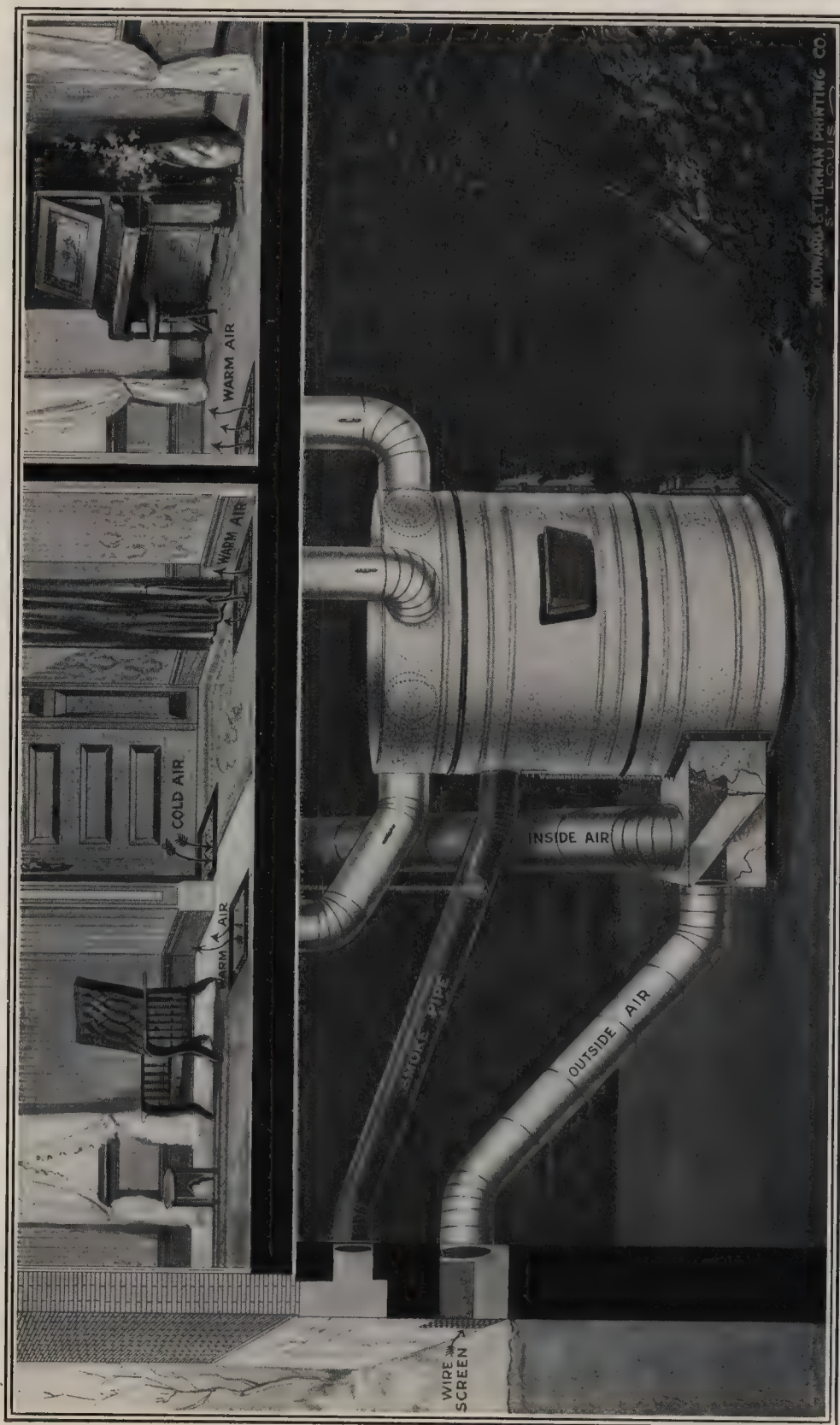


GLEN ECHO CLUB
ST. LOUIS
COUNTY



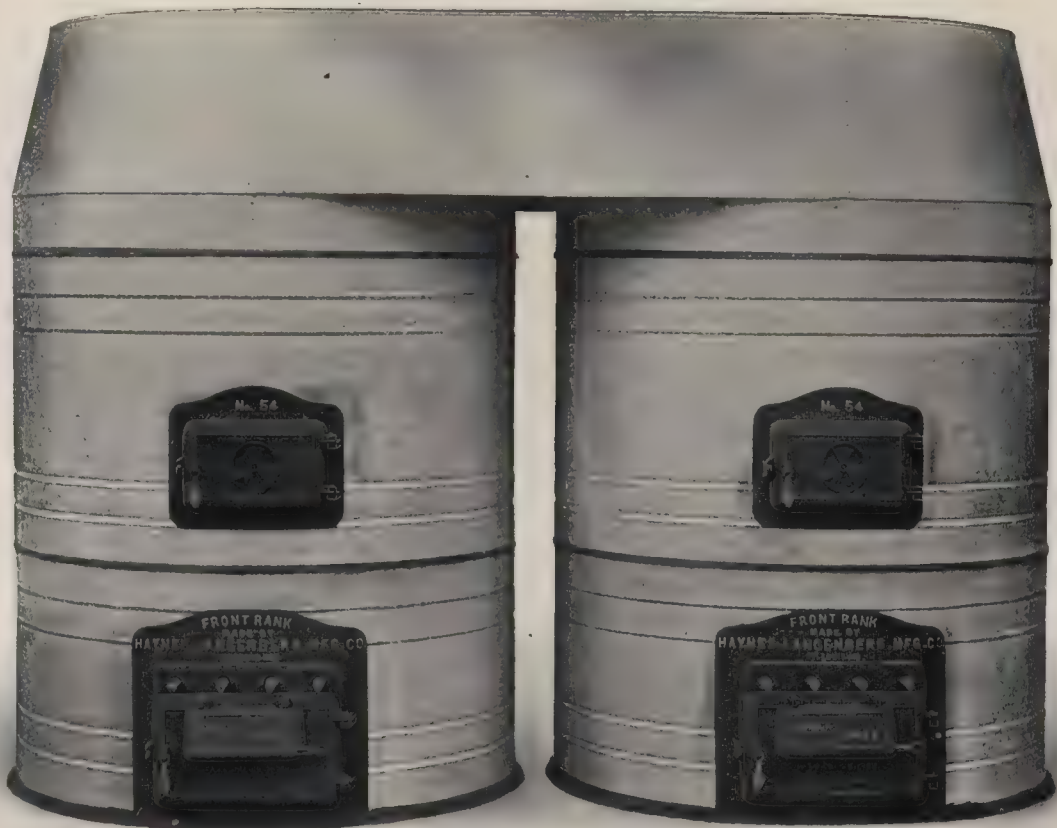
RESIDENCE OF
HUGH MCKITTRICK
V.-P. HARGADINE-MCKITTRICK DRY GOODS CO.

FRONT RANK STEEL FURNACES



Above cut shows how we arrange our inside and outside cold air connections so that they may be used independently. With the damper as shown in cut inside air only can be used. When damper is drawn up to top of chute, outside air only can be used.

FRONT RANK STEEL FURNACES



FRONT RANK TWINS.

In large residences, even where one large furnace will supply enough heat, it is not only more economical to use twins but more satisfactory from the fact that in fall and spring, when but little heat is needed, one of the twins will furnish sufficient heat for the whole house, whereas with an average fire in a large furnace the house will be overheated. The occupant soon learns this and rather than have the house too hot will do without heat altogether.

FRONT RANK STEEL FURNACES



"WINNER" WARM AIR FURNACE, SHOWING GAS BURNER.

Dimensions and Price List.

No. 136.

Furnace on base, without casing.....	53 in. high
Fire pot, 16x20	11 in. high
Drum, 26-in. diameter.....	30 in. high
Casing, 35-in. diameter.....	5 ft. high
Heating capacity	12,000 cu. ft.
Price	\$70.00

No. 143.

Furnace on base	55 in. high
Fire pot, 19x22	12 in. high
Drum, 28½-in. diameter.....	30 in. high
Casing, 43-in. diameter.....	5 ft. 3 in. high
Heating capacity	18,000 cu. ft.
Price	\$90.00

THE "WINNER" WARM AIR FURNACE

IS MADE TO SUPPLY A DEMAND
FOR A MEDIUM PRICED FURNACE

It is an all-round Winner, in style, make-up and general appearance. In short, it is the handsomest thing of the kind on the market. It has several features not usually found in furnaces of this class, among them a large feed door, in the pouch of which provision is made for a **hot-water coil**.

A diving flue is placed in the rear of steel drum, which prevents a direct draft. The products of combustion are first drawn to a point near the top of the drum, and then down to the opening of the smoke-pipe.

The steel construction of the "Winner" is made by the same heavy machinery used in making our well-known **FRONT RANK Steel Furnace**.

For a moderately priced furnace, it is the best thing on the market.

Casing rings, vapor pan, check damper for smoke-pipe, and poker, go with each furnace.

Discounts on application.

HOMES HEATED WITH FRONT RANK STEEL FURNACES



RESIDENCE OF COL. S. W. FORDYCE
21 WASHINGTON TERRACE



RESIDENCE OF
MRS. GEO. W. SIMPKINS
3820 WASHINGTON AVE.



RESIDENCE OF JNO. D. FILLEY
40 WESTMORELAND PLACE
VICE PRES'T ST. LOUIS TRUST CO.

DIRECTIONS FOR USING FRONT RANK FURNACES

TO START A FIRE

Put grates in order by turning each until shaker is in vertical position, so that the flat sides will be up. If the corners of the bars are allowed to stick into the fire they will be damaged.

Use plenty of kindling, but not too much coal, when starting a fire. Add more coal as the fuel becomes well ignited; otherwise, if the fire is choked up with too much fuel, smoke will be generated faster than it will be carried off.

GENERAL DIRECTIONS

Keep the fire pot well filled with coal, even after the building is thoroughly warmed. There is more economy in keeping a steady fire, which can easily be controlled by the dampers, than to allow it to run down after the house becomes warmed, and have to rebuild it.

In other words, it is better, if it is desired to keep the house at an even temperature, to hold a good fire down than to allow a small fire to burn more rapidly, burn out, and have to build it up.

When adding fuel, see that the ash-pit door is closed. This will prevent smoke puffing out at the feed door.

To keep fire over night, shake the ashes down well and see that the fire is clear to the grates, then fill the fire pot well with coal, and regulate the dampers according to the draft in the chimney. See that the draft, or ash-pit door, is shut tight, and always raise or open the check draft in the smoke-pipe when checking the draft. Close it when more draft is desired. Sometimes it is necessary, when the draft is strong, to both raise this check draft and to turn the damper in the smoke-pipe partly off.

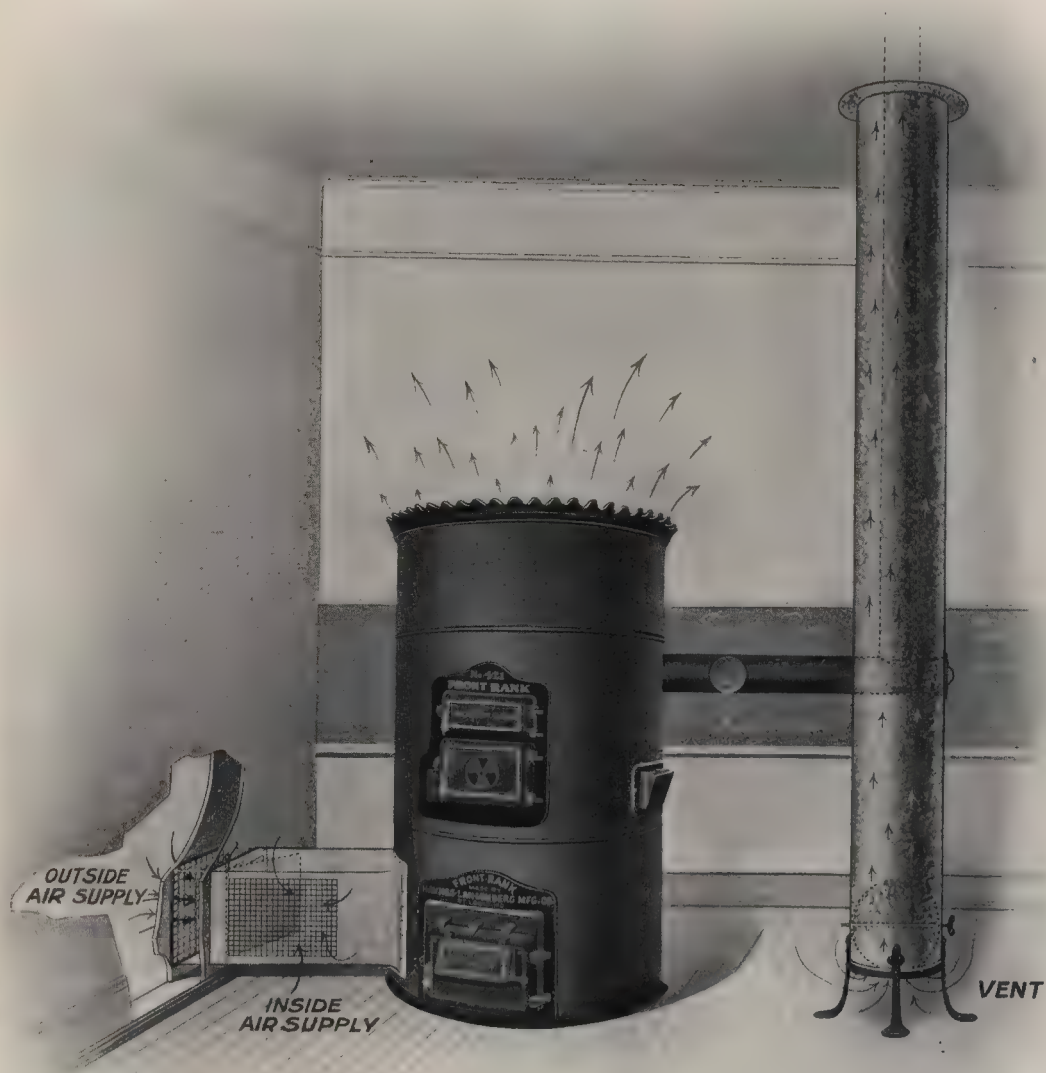
To shake the grate, place the handle on each bar in turn, and move it quickly to right and left several times. Before removing the handle, always see that it is in a vertical position.

The ashes should be removed at least once a day, and never allowed to quite fill the ash pit.

Neither registers nor dampers must all be closed at the same time, when the furnace is in use. It will damage the furnace to prevent air from passing over it when it is intensely hot.

The dampers in the hot-air pipes are for regulating the flow of air to any particular room, as well as for shutting it off entirely. No matter how carefully a heating system may be planned, the flow of warm air to some rooms will be more rapid than to others. The dampers are to equalize this flow.

FRONT RANK STEEL FURNACES



THE FRONT RANK SCHOOL HEATER AND VENTILATOR

This system has been designed especially to meet the requirements of the up-to-date School Board. School officers and parents are coming to realize that it is just as important to ventilate a school room as it is to heat it.

Heating a room, say 25 by 40, with fifty or sixty children in it, with a stove, as is done in a great many village and rural schools, is simply jeopardizing the health of every child in the room. How could it be otherwise when they are continuously breathing the same air over and over all day long.

A single child with consumption or any other contagious disease is liable to convey it to the entire room. With the **FRONT RANK** system, shown here, which changes the air several times an hour, the danger is largely eliminated. It is self-evident that air that has become foul and vitiated should not be reheated and rebreathed, but should be passed out of the room through the ventilator.

Many of the so-called school-room **heaters** and ventilators are mere **heaters** and not ventilators. They have no means of shutting off inside circulation, besides their vent shafts are often connected to a chimney entirely too small for both the smoke-pipe and the vent.

It will be seen by referring to the drawing on the opposite page that the apparatus is very simple, and easily controlled. By turning the damper in the cold-air duct to the right the inside air is shut off, and the **entire supply comes directly from out doors.**

The smoke pipe passes through the center of the vent pipe, thus making it a positive, never-failing ventilator. At night and before the children arrive in the morning the outside air is shut off and the air taken from the room.

We do not believe this way of **heating and ventilating** one and two-room schools can be improved upon. Unlike the stove, this method, on account of the rapid and positive change of air every few minutes, causes the temperature to be practically the same all over the room.

HOMES HEATED WITH FRONT RANK STEEL FURNACES



RESIDENCE OF SAUNDERS NORVELL
5337 CABANNE AVE.
PRES'T NORVELL-SHAPLEIGH HARDWARE CO.



Residence of FRANK V. HAMMAR
7 Hortense Place
Pres't Hammar Paint Co.



Residence of GEO. W. SIMMONS
4937 Berlin Ave.
General Manager Simmons Hardware Co.



Res. of GEO. S. TEBBETTS, 5460 Delmar Bl.
L. B. Tebbetts & Sons Carriage Co.

FRONT RANK STEEL FURNACES

SPECIAL FEATURES.

Feed Pouch.

The Front Rank Feed Pouch is a solid one-piece casting. The part the door hangs on extends out through the casing so that it is impossible for smoke or gas to escape into the casing; the ordinary asbestos joint used in the average furnace being entirely eliminated.

Hot Water Coil.

In moderate weather when but little heat is needed, the hot water coil should be as near the fire as possible. We have placed it at the bottom of the pouch.

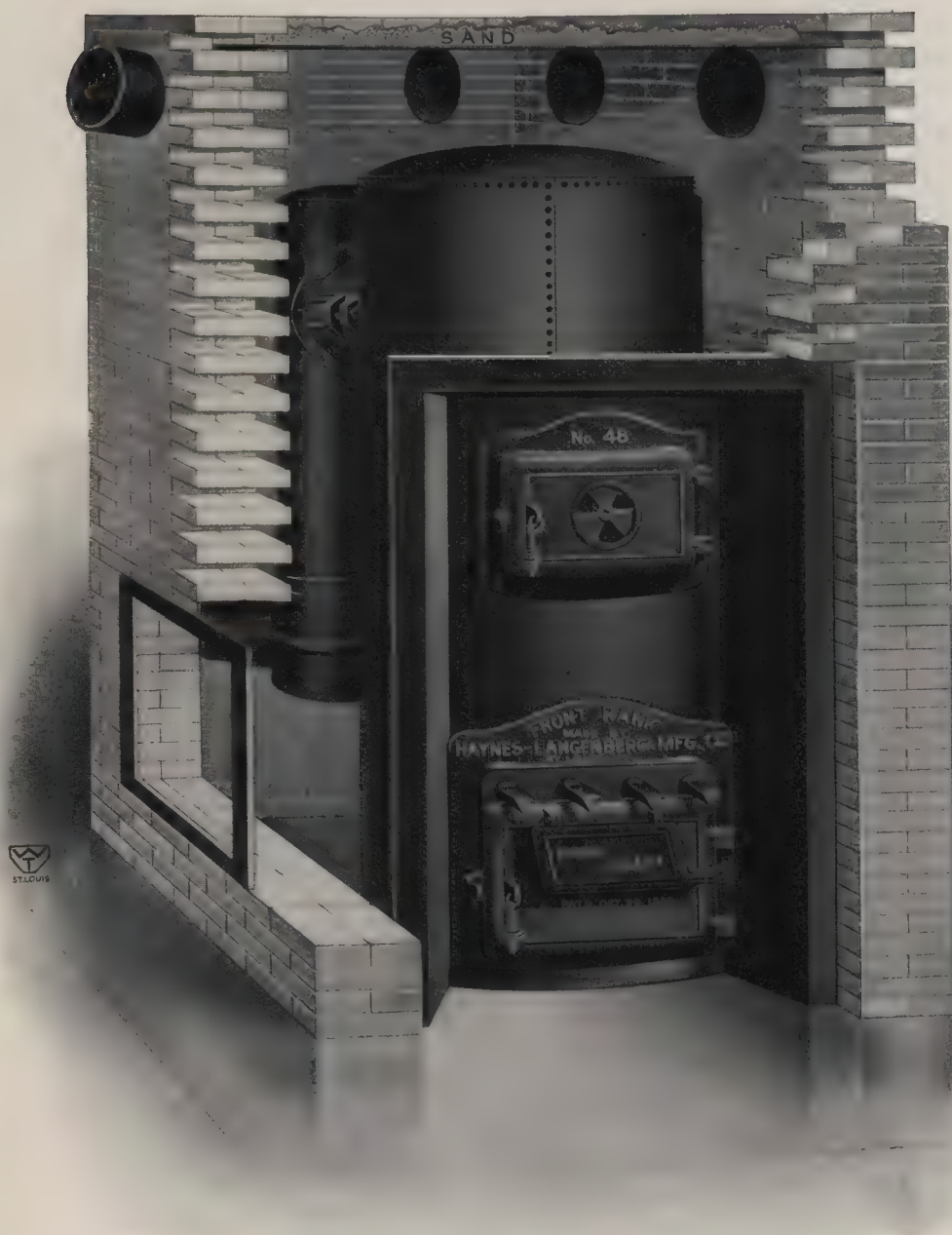


NEW STYLE FRONT RANK GRATE.

If there is one feature that has more to do with the successful operation of a furnace than another, it is the grate. Each bar of the new Front Rank grate works independently. As can be seen from accompanying cut, there are no cog wheels, so that any bar can be shaken without disturbing the others. This enables one to shake the outside bars, thus making the fire burn better around the edges. A child can shake the new grates. These bars are triangular and any side may be turned to the fire. Keep the flat sides of the grates up and never let the corners stick into the fire. If this is done and the ashes are never allowed to fill the pit, grates will last very much longer.



FRONT RANK STEEL FURNACES



FRONT RANK FURNACE IN BRICK SET CASING.

See directions for setting, page 11.

FRONT RANK STEEL FURNACES



RESIDENCE IN CALGARY, ALBERTA, CANADA.

Heated with Front Rank Steel Furnace.

Installed by Chisholm & Kirk, Ltd., Calgary, Alberta.



RESIDENCE OF MRS. ANNIE ELLERS BUNKER, SEOUL, COREA.

FRONT RANK STEEL FURNACES



FRONT RANK WOOD FURNACE

In Portable Galvanized Iron Casing.

This casing is less expensive than brick; it makes a neat appearance, and being double over the hottest part of the furnace, very little heat is lost.

Dimensions of casing same as for brick casing.

HOW TO CONSTRUCT BRICK WORK IN INSTALLING FRONT RANK WOOD FURNACES

Casing walls are built to a point about parallel with top of Furnace, after which the collars for the warm-air pipes are placed and the wall continued to a point flush with the top of the pipes. Iron bars are then placed across the casing, and on these a sheet-iron covering is laid. The wall is continued above the sheet-iron covering two tiers, then sand is filled in to the top of the bricks. Cold-air duct may enter casing at either side or rear end.

FRONT RANK IMPROVED WOOD-BURNING FURNACES

Made in Following Sizes Only

Number of Furnace.....	66	88
Diameter of Drum.....inches	26	32
Diameter of Radiators.....inches	11	15
Diameter of Smoke-Pipe.....inches	8	9
Length of Drum.....inches	54	54
Heating Capacity.....cubic feet	32,000	70,000
Inside Dimensions of Casing.....	3'10"x4'10"	4'6"x5'

Brick required for 66 Casing.....2,000

Brick required for 88 Casing.....2,400



FRONT RANK IMPROVED WOOD BURNING FURNACE

In sections of the country where wood is a less expensive fuel than coal, there is a demand for a first-class wood-burning furnace. Our **FRONT RANK Wood Furnace** is made expressly to fill this want. It is constructed on similar lines to our **FRONT RANK Steel Furnace** for coal, and has in common with it the two large radiators, steel dust box and smoke flue. As shown in illustration above, this furnace is brick-set, the only point of difference in the construction being that it is built on horizontal lines. The cold-air inlet may enter on either side of casing or through the rear wall. Particular attention is called to the size of the feed door for the admission of very large fuel. The fire chamber is of a depth to accommodate four-foot cordwood.

Price of Wood Furnace, including front for galvanized iron
or brick-set casing.....\$140 00 \$195 00
Price of Wood Furnace, with galvanized iron casing..... 195 00 255 00

FRONT RANK STEEL FURNACES

Black Japanned Registers, Faces and Borders

Floor Opening	Complete Register without Border	Face Plate Only	Border Only	Floor Opening	Complete Register without Border	Face Plate Only	Border Only
4x 6	\$0.40	\$0.55	\$1.15	12x12	\$4.00	\$2.70	\$2.70
4x 8	1.50	.60	1.15	12x14	4.35	2.80	2.80
4x10	1.55	.75	1.15	12x15	4.50	2.90	2.90
4x12	1.80	.95	1.35	12x16	5.60	3.50	3.50
4x13	2.50	1.10	1.75	12x17	6.35	3.80	3.80
4x15	3.00	1.20	1.90	12x18	6.80	3.90	3.90
4x18	4.00	1.30	2.75	12x19	7.50	4.00	4.00
4x21	5.00	2.25	3.15	12x20	9.00	4.50	4.50
4x24	6.00	2.75	3.75	12x22	11.65	5.50	5.50
5x 8	1.55	.90	1.15	14x14	7.90	4.05	4.05
5x 9	1.55	1.00	1.20	14x15	8.25	4.20	4.20
5x10	1.60	1.05	1.20	14x16	8.50	4.30	4.30
5x11	1.75	1.10	1.30	14x18	9.00	4.50	4.50
5x12	1.80	1.20	1.40	14x20	9.50	4.80	4.80
5x13	2.60	1.35	1.80	16x16	11.00	5.10	5.10
5x14	2.80	1.50	1.90	16x18	12.00	5.30	5.30
5x15	3.60	1.65	2.00	16x20	12.35	6.10	6.10
5x16	3.90	1.80	2.60	16x22	14.75	6.70	6.70
5x17	4.20	2.00	2.70	16x24	15.00	7.00	7.00
5x18	5.25	2.10	3.20	16x26	22.00	9.50	9.50
6x 6	1.50	.90	1.15	16x28	24.60	10.00	10.00
6x 8	1.55	1.00	1.15	16x30	27.90	11.00	11.00
6x 9	1.60	1.05	1.20	18x18	18.50	7.20	7.20
6x10	1.60	1.05	1.20	18x21	20.50	7.75	7.75
6x12	1.85	1.25	1.45	18x22	21.00	8.00	8.00
6x14	2.85	1.65	1.90	18x24	21.50	8.35	8.35
6x15	3.70	1.90	2.35	18x28	30.00	12.75	12.75
6x16	4.00	2.00	2.70	18x30	31.25	13.25	13.25
6x17	5.00	2.20	3.15	18x36	38.00	17.25	17.25
6x18	5.20	2.25	3.25	20x20	19.75	8.00	8.00
6x19	6.00	2.45	3.50	20x22	21.60	8.40	8.40
6x20	6.00	2.50	3.50	20x24	22.00	8.60	8.60
6x22	7.00	3.00	3.95	20x26	23.50	9.50	9.50
7x 7	1.55	1.00	1.20	20x28	28.90	11.50	11.50
7x 9	1.60	1.10	1.25	20x29	32.00	13.00	13.00
7x10	1.65	1.10	1.25	20x30	33.50	11.60	13.50
7x12	1.90	1.25	1.50	20x32	37.50	17.10	17.10
7x14	2.95	1.90	1.90	20x34	41.50	18.00	18.00
7x15	3.75	2.55	2.55	20x36	43.00	18.50	18.50
8x 8	1.60	1.05	1.20	22x22	28.50	11.40	11.40
8x 9	1.65	1.10	1.25	22x24	29.50	11.80	11.80
8x10	1.65	1.10	1.25	22x26	31.00	13.10	13.10
8x12	1.90	1.30	1.50	22x28	33.90	13.90	13.90
8x14	3.00	2.00	2.00	22x29	35.00	15.00	15.00
8x15	3.80	2.60	2.60	22x30	36.00	16.00	16.00
8x16	4.50	2.70	2.70	22x32	42.00	17.50	17.50
8x17	5.95	3.30	3.40	22x36	47.50	20.50	20.50
8x18	6.60	3.50	3.50	22x38	52.00	22.50	22.50
8x19	7.90	3.65	3.70	22x40	61.00	26.50	26.50
8x20	8.70	3.90	3.90	22x42	64.00	28.00	27.00
8x22	10.75	4.65	4.80	24x24	30.00	12.00	12.00
9x 9	2.00	1.40	1.60	24x26	32.00	12.00	12.00
9x12	2.10	1.45	1.65	24x27	33.95	14.00	14.00
9x13	2.95	2.00	2.00	24x30	38.00	17.25	17.25
9x14	3.10	2.15	2.15	27x27	37.25	17.00	17.00
10x10	2.35	1.65	1.70	28x30	.....	21.00	21.00
10x12	2.40	1.70	1.75	28x32	53.00	24.50	24.50
10x14	3.15	2.20	2.20	30x30	49.00	21.50	21.50
10x15	4.40	2.65	2.65	30x36	67.50	28.50	28.50
10x16	4.85	2.95	2.95	30x42	77.50	33.00	29.50
10x17	6.00	3.60	3.60	30x48	.....	39.00	.....
10x18	6.70	3.70	3.70	36x38	80.00	35.00	29.50
10x19	8.00	4.20	4.20	38x38	100.00	43.50	32.00
10x20	8.90	4.35	4.35	38x40	.....	46.00	34.00
10x22	10.40	4.90	4.90	38x42	.....	50.00	36.00

**Table Showing Net Capacities of Registers and
Areas of Corresponding Pipes**

Size of Opening	Capacity Sq. in.	Diameter of Pipe	Area in Sq. in.
8x10	53	8 in.	50
9x12	72	9 in.	63
10x12	80	10 in.	78
10x14	93	11 in.	95
12x15	120	12 in.	113
14x18	168	13 in.	133
14x20	187	14 in.	154
16x18	192	15 in.	176
16x20	213	16 in.	201
16x24	216	17 in.	227
18x24	288	18 in.	254
20x24	320	19 in.	283
21x29	406	20 in.	314
22x26	380	21 in.	346
22x28	411	22 in.	380
24x24	384	23 in.	415
24x27	432	24 in.	452
24x30	480	25 in.	490
27x27	486	26 in.	531
27x38	684	27 in.	572
28x30	560	28 in.	616
28x32	597	29 in.	660
28x36	672	30 in.	707
30x30	600	31 in.	755
30x36	720	32 in.	804
30x42	840	33 in.	855
30x48	960	34 in.	907
36x36	864	35 in.	962

ESTIMATES

It is necessary for us to have the following information before we can make an intelligent proposition for heating:

Dimensions of the building—length, breadth and height of each room.

A pencil sketch in which a quarter inch represents a foot is most convenient for us.

In giving the measures of a church be careful to give the correct height of the ceiling.

State the size and location of chimney and cellar and show the points of the compass.

If the cellar does not extend under the whole house, give the distance from the joists to the ground where not excavated so that we may know whether there is room to run the pipes.

Care in giving the above information will save both time and money.

HOMES HEATED WITH FRONT RANK STEEL FURNACES



ISAAC H. LIONBERGER
37 WESTMORELAND PLACE, ST. LOUIS

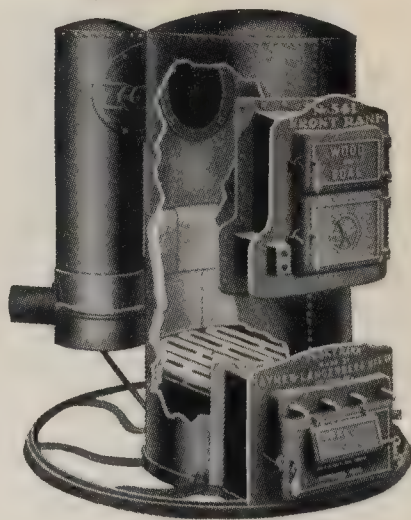
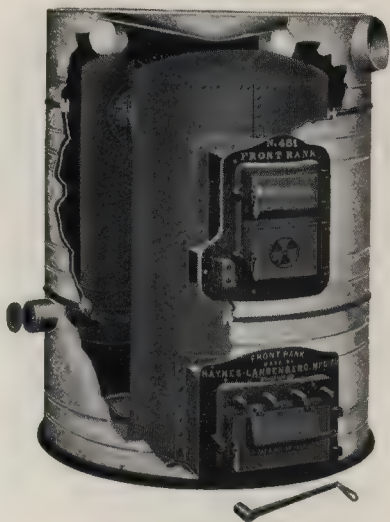


GEO. A. RANDOLPH
ST. LOUIS

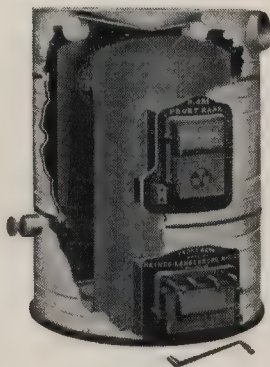


MRS. ELIZABETH SCHNAIDER
24 PORTLAND PLACE, ST. LOUIS

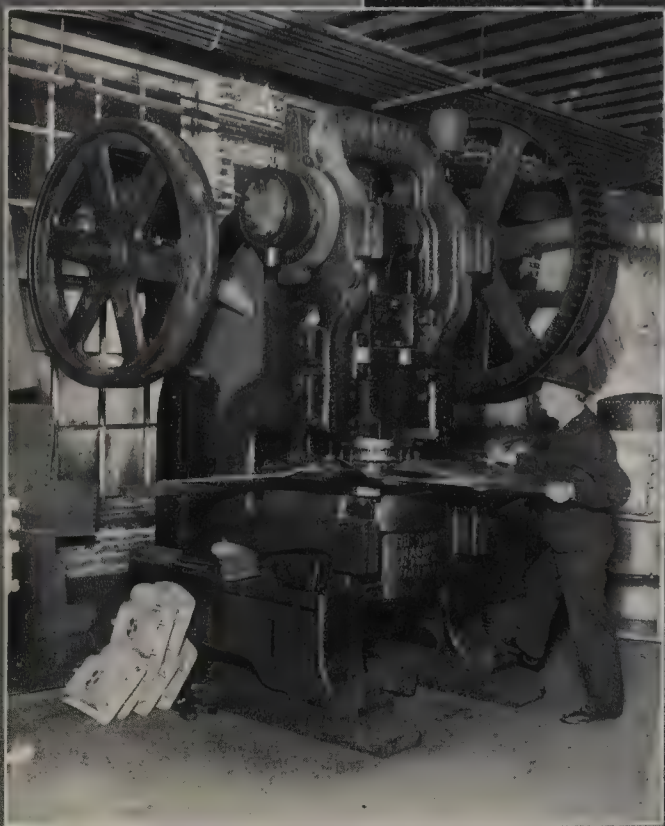
FRONT RANK STEEL FURNACES



THESE AND
OTHER CUTS
FURNISHED FREE
FOR ADVERTISING
PURPOSES



FRONT RANK STEEL FURNACES



FRONT RANK STEEL FURNACES



On pages 36 and 37 we show cuts of some of the powerful machinery used in **flanging the heads** and **riveting the bodies** of our **FRONT RANK** Steel Furnaces.

These machines are of the latest design and are the heaviest and most powerful used for this kind of work. The heads are **flanged cold**. The enormous pressure used in driving the rivets causes the two sheets to appear as one solid mass of steel.

F R O N T R A N K S T E E L F U R N A C E S

PRICE LIST OF FRONT RANK STEEL FURNACES

No. of Furnace.....	42x	45x	48x	51x	54x	60x	160
381	421	451	481	511	541	601	...
Price with Casing.....	\$105.00	\$130.00	\$140.00	\$165.00	\$175.00	\$195.00	\$225.00 \$270.00
Price without Casing.....	85.00	105.00	115.00	135.00	145.00	165.00	190.00 230.00
Price of Brick-Set, including front and man-hole door	115.00	125.00	145.00	155.00	175.00	205.00	240.00

All F. O. B. St. Louis.

DIMENSIONS OF FRONT RANK STEEL FURNACES

No. of Furnace.....	42x	45x	48x	51x	54x	60x	160
381	421	451	481	511	541	601	...
Diam. of Casing.....	38	42	45	48	51	54	60 66
Diam. of Drum... ..	18	22	22	26	26	29	32 32
Diam. of Fire Pot.....	16	20	20	23	23	26	29 29
Diam. of Radiators.....	9	10	10	11	11	13	15 18
Height of Radiators.....	36	33	36	33	36	36	36 42
Diam. of Smoke Pipe.....	8	8	8	8	9	9	10 10
Height of Drum.....	56	58	59	60	60	63	64 70
Height of Furnace over all, not less than.....	66	68	68	70	70	70	72 78
Heating capacity, cu. ft....	15,000	20,000	23,000	30,000	32,000	45,000	70,000 100,000
Shipping weight	600	950	1,000	1,100	1,150	1,300	1,500 1,700

DIRECTIONS FOR MAKING CASINGS AND JACKETS

No. of Furnace.	Bottom Section.	Middle Section.	Canopy or Hood.
No. 381.....	23 inches	30 inches	12 inches
No. 421.....	24 inches	30 inches	14 inches
No. 451.....	24 inches	30 inches	14 inches
No. 481.....	24 inches	30 inches	16 inches
No. 511.....	24 inches	30 inches	16 inches
No. 541.....	24 inches	30 inches	18 inches
No. 601.....	24 inches	30 inches	18 inches
No. 160.....	24 inches	30 inches	24 inches

The heights of canopies are governed by depth of cellars, but the center of the canopy should be kept at least five or six inches from the center of the furnace drum.

TERMS

Terms on furnaces are 60 days net, or 2 per cent cash 30 days, F. O. B., St. Louis, unless otherwise agreed. Repairs, net cash 30 days.

All accounts subject to draft at maturity.

All shipments made at owner's risk, in order to secure lowest freight rates.

Claims for loss or damage in transit must be made against the transportation company by the consignee, as ownership passes out of our hands upon delivery of goods to them.

Claims for corrections of any nature must be made within ten days after receipt of goods.

Orders through our salesmen must state all agreements and conditions, and must bear purchaser's signature. Verbal agreements are not recognized.

Goods must not be returned without our consent.

Give shipping directions with each order, and be sure to state plainly what is wanted.

An order for grates **must** state whether they are for Old or New Style furnace. The New Style bars all come through the casing, and each bar is shaken separately.

In the Old Style, only one bar is shaken, the others being turned by means of cogs connected to the shaker bar.

We wish to emphasize this grate bar matter.

Any one who has had to wait two weeks for a grate bar in zero weather realizes its importance.

Our list prices for furnaces, either with or without casings, include, without extra charge, poker, scraper, shaker handle, water pan, check draft and damper for smoke pipe, chain and pulleys for regulating draft, and cement.

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THE COMMONWEALTH OF MASSACHUSETTS
OFFICE OF THE ATTORNEY GENERAL



**GOOD-BYE! WE'RE GOING HOME
THE FRONT RANK IS TOO HOT FOR US.**